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Adaptive reactions of cardiovascular system of boys with different level of sexual maturity to physical exercise

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Abstract

Graduated physical exercise with the moderate power (50% of PWC170) induces marked change in such cardiovascular system indices as stroke volume and cardiac output, heart rate in boys with the age of 11-16 years. The nature of reactions of the boys' cardiovascular systems rapid adaptation to physical exercise during adolescence period of ontogenesis depends on the level of their sexual maturity. The boys with the 1st and the 2nd grades of sexual maturity demonstrate the reactions to exercise with the highest growth of heart rate, while the highest growth of cardiac output is typical for the boys with the 3-5th grades of sexual maturity. It was revealed that for the boys with the 3-4th sexual maturity stages the reactions to physical activity were expressed in the maximum values of stroke volume and cardiac output and the recovery period for the investigated parameters was rather extended. At this stage of the boys' development the recovery of cardiac output to the level at rest has a non-linear nature, there can be observed a "negative phase" in the heart rate recovery which can be considered as a symptom of excessive response, unfavorable cardiovascular system reaction to physical exercise.

Keywords

Adaptive reactions, Cardiac output, Cardiovascular system, Heart rate, Physical exercise, Stages of sexual maturity, Stroke volume